CLAIMS

What is claimed is:

1.     An information input method comprising:

detecting motion information of hands and fingers in space;

determining locations of the hands and fingers by interpreting the detected motion information; and

inputting location information corresponding to the determined locations of the hands and fingers.


2.     An information input method of a computer system having a virtual keyboard, the information input method comprising:

detecting motion information of hands and fingers;

determining locations of the hands and fingers by interpreting the detected motion information;

displaying a virtual input apparatus having a predetermined shape on a virtual keyboard of a screen by referring to the determined locations of the hands and fingers; and

applying a force to a finger corresponding to the location where information is input, if information is input using the displayed virtual input apparatus.


3.     The information input method of claim 1, wherein said detecting the motion information comprises detecting the motion information using a sensor attached to a predetermined part of one of the fingers, where the sensor generates an acceleration signal in response to a movement of the one finger.


4.     The information input method of claim 1, wherein one of the motion and location information is sent and received by wire or wirelessly.


5.     The information input method of claim 2, wherein said determining the locations of the hands and fingers further comprises, if a signal of a switch to which a predetermined function is defined is detected, performing the predetermined function.


6.     The information input method of claim 2, wherein the displayed virtual input apparatus has a predetermined shape that is displayed overlaying the virtual keyboard.

7.      The information input method of claim 2, wherein said displaying the virtual input apparatus comprises displaying the motion of the virtual input apparatus having a predetermined shape on the screen in real time using the virtual keyboard and the detected motion information.

8.      The information input method of claim 2, wherein said applying the force to the finger comprises applying the force using a force generator attached to a predetermined part of the finger that corresponds to the location where information is input.

9.      An information input system comprising:

sensors attached to predetermined parts of hands and/or fingers to sense motions of the hands and/or fingers to produce motion information;

an information input processing unit to convert the motion information of the hands and/or fingers into location information of the hands and/or fingers, to display an input apparatus having a predetermined shape on a virtual keyboard based on the location information of the hands and/or fingers, to determine one of the fingers and hands which input information, and to send an information input completion signal to the one finger and/or hand;

a processor to convert the motion information detected by said sensors into data having a predetermined form, to send the converted data to said information input processing unit, and to receive the information input completion signal of the one finger and/or hand corresponding to the input information from said information input processing unit; and

a force generating units attached to predetermined parts of the fingers and/or hands, one of said force generating units to apply a force to the one finger and/or hand if an information input completion signal is received from said processor.

10.     The information input system of claim 9, wherein said processor comprises:

an analog-to-digital converting unit to convert the detected analog motion information into a digital signal;

a central processing unit to convert the digital signal into data having a predetermined form, and to output the received information input completion signal to said one force generating unit; and

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a communications module to modulate the converted digital signal, to send the modulated digital signal to said information input processing unit, and to receive the information input completion signal from said information input processing unit.

11.      The information input system of claim 9, wherein said information input processing unit comprises:

an information interpreter to detect the location information of the hands and fingers by interpreting the motion information of the hands and fingers;

an information generator to generate an input apparatus having a predetermined shape based on the location information of the hands and/or fingers interpreted by the information interpreter, and to generate the location information of the one finger and/or hand which moved; and

an information input completion signal generator to output the information input completion signal to the corresponding one finger and/or hand based on the location information of the fingers generated by the information generator.

12.      An information input system to input information to a computer, the information input system comprising:

sensors attached to predetermined parts of hands and/or fingers to sense a motion of the hands and/or fingers;

a processor to interpret a location of the hands and/or fingers based on the sensed motion of the hands and/or fingers detected by said sensors, to send the interpreted location to the computer, and to receive an information input completion signal from the computer; and

force generating units attached to other predetermined parts of the hands and/or fingers and, if the information input completion signal generated by said processor is received from said processor, to apply a force to one of the hands and/or fingers which input information.

13.      The information input system of claim 9, wherein said force generating units comprise devices that generate vibration.

14.      The information input system of claim 9, wherein said sensors comprise IMEMS (inertial Micro-Electro Mechanical System) sensors that sense information on the acceleration and angular velocity of the fingers and/or hands.

15.      The information input system of claim 9, wherein said processor is attached to a back of the hands and/or to a wrist.

16.      The information input system of claim 9, further comprising function keys attached additional predetermined parts of the hands and/or fingers to perform particular functions.

17.      The information input system of claim 16, wherein one of said function key is attached to a predetermined part between joints of an index finger.

18.      The information input system of claim 16, wherein one of the particular functions of said function keys is defined arbitrarily by a user.

19.      The information input method of claim 2, wherein said detecting the motion information comprises detecting the motion information using a sensor attached to a predetermined part of one of the fingers, where one of the sensors generates an acceleration signal in response to a movement of the one finger.

20.      The information input method of claim 2, wherein one of the motion and location information is sent and received by wire or wirelessly.

21.      The information input system of claim 12, wherein said force generating units comprises devices to generate vibration.

22.      The information input system of claim 12, wherein said sensors comprise IMEMS (inertial Micro-Electro Mechanical System) sensors to sense information on the acceleration and angular velocity of the fingers and/or hands.

23.      The information input system of claim 12, wherein said processor is attached to a back of the hands and/or to a wrist.

24.      The information input system of claim 12, further comprising function keys attached to additional predetermined parts of the hands and/or fingers to perform particular function.

25.     The information input system of claim 24, wherein one of said function keys is attached to a predetermined part between joints of an index finger.

26.     The information input system of claim 24, wherein one of the particular functions of said function keys is defined arbitrarily by a user.

27.     An information input device attached to an appendage of a part of a body performing input to control a virtual input device generated by a computer, comprising:

a sensor to contact a first portion of the appendage to detect a motion of the first portion corresponding to the input to control the virtual input device, and to send the sensed motion to the computer; and

a force generating unit to contact a second portion of the appendage, to receive an input completion signal from the computer indicating that the input has controlled the virtual input device, and to apply a force to the second portion of the appendage based upon the received input completion signal.

28.     The information input device of claim 27, further comprising a cover, wherein:

the appendage comprises a finger,

said sensor is attached to said cover to be placed on the finger, and

said force generating unit is attached to said cover to be placed on the finger.

29.     The information input device of claim 27, wherein said sensor detects the motion of the finger relative to a motion of a hand to which the finger is attached.

30.     The information input device of claim 27, further comprising a function key attached to said cover, said function key being configurable to send a message to perform a particular function on the virtual input device.

31.     The information input device of claim 30, wherein the function being performed is one of SHIFT, Ctrl, and Caps Lock.

32.     The information input device of claim 30, wherein the appendage includes an index finger, and the second portion is at or between first and second joints of the index finger such that said function key is attached to at or between the first and the second joints.

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33.     The information input device of claim 32, further comprising a cover, wherein said sensor is attached to said cover at the index finger and detects the motion of the index finger relative to a motion of a hand to which the index finger is attached, and said function key is attached to said cover at the first and second joints of the index finger.

34.     The information input device of claim 32, further comprising a cover, wherein the appendage further comprises another finger, said sensor is attached to said cover at the another finger and detects the motion of the another finger relative to a motion of a hand to which the another finger is attached, and said function key is attached to said cover at the first and second joints of the index finger.

35.     The information input device of claim 28, wherein said cover comprises a glove covering the finger and a hand to which the finger is attached.

36.     An information input system, comprising:

a sensor attachable to an appendage to detect a relative motion of a part of the appendage relative to other parts of the appendage, and to send motion information according to the relative motion; and

an information input unit to generate a virtual input device, and to operate the virtual input device according to the motion information received from said sensor.

37.     The information input system of claim 36, wherein said information input unit comprises:

an information interpreting unit to interpret a location of the appendage based upon the received motion information; and

an information generating unit to generate the virtual input device and a virtual appendage corresponding to the appendage, and to manipulate the virtual appendage relative to the virtual input device according to the interpreted location of the appendage.

38.     The information input system of claim 36, further comprising a force generating unit that receives an information completion signal and applies a force to the part of the appendage based upon the received information completion signal, wherein said information input unit generates the information completion signal when the virtual input device is operated according to the motion information.

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39.     The information input system of claim 38, wherein said information input unit comprises:

an information interpreting unit to interpret a location of the appendage based upon the received motion information;

an information generating unit to generate the virtual input device and a virtual appendage corresponding to the appendage, and to manipulate the virtual appendage relative to the virtual input device according to the interpreted location of the appendage; and

an information input completion generating unit to generate the information completion signal when the virtual appendage is manipulated to complete an input into the virtual input device.

40.     The information input system of claim 39, wherein the appendage is a finger of a hand, the virtual appendage is a virtual finger, and the virtual input device is a virtual keyboard which is operated by the virtual finger in accordance with the motion information.

41.     A computer readable medium encoded with processing instructions for implementing an information input method performed by a computer to be connected to a sensor attached to a first portion of an appendage, the method comprising:

receiving motion information from the sensor, the motion information being generated in accordance with a motion of the first portion of the appendage relative to a second portion of the appendage;

interpreting the received motion information to determine a location of the first portion of the appendage;

generating a virtual input device and a virtual appendage; and

moving the virtual appendage in accordance with the determined location of the first portion of the appendage to operate the virtual input device.

42.     The computer readable medium of claim 41, further comprising displaying the virtual input device and the virtual appendage on a display.

43.     The computer readable medium of claim 42, further comprising:

determining when the moved virtual appendage has operated the virtual input device; and

generating an input completion signal to be sent to a force generating unit to apply a force to the appendage.

44.     The computer readable medium of claim 43, wherein:

the appendage comprises a hand and the first portion of the appendage comprises a finger of the hand,

said generating the virtual input device comprises generating a virtual keyboard and said generating the virtual appendage comprises generating a virtual finger corresponding to the finger of the hand, and

said moving the virtual appendage comprises moving the virtual finger to depress an element of the virtual keyboard.

45.     The computer readable medium of claim 44, wherein said generating the input completion signal comprises generating the input completion signal to apply the force to the finger of the hand.